MCF 3M Day 5

A textbook costs $50.00. The number of students who need one is represented by x. The total cost of purchasing the books for a class is represented as a function f(x).

a) write an equation in function notation to represent the cost of purchasing the books
b) state the degree
c) use the equation to calculate the cost of purchasing 26 books
d) What is the domain and range of this function?

Feb 9-7:59 AM

MCF 3M Day 5

A textbook costs $50.00. The number of students who need one is represented by x. The total cost of purchasing the books for a class is represented as a function f(x).

a) write an equation in function notation to represent the cost of purchasing the books
b) state the degree $f(x) = 50x^1$
c) use the equation to calculate the cost of purchasing 26 books

$f(26) = 50(26)$
$f(26) = 1300$

d) What is the domain and range of this function?

$D = \{x \in W \mid 0 \le x \le 26\}$
$R = \{f(x) \in W \mid 0 \le f(x) \le 1300\}$

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Working with Function Notation
Sec 1.3 p. 27

Substitution

I) $h(t) = y$ $h(t)$ - function notation - used to represent the dep variable for a given value of the ind variable

clap

$h(t)$ = height in m

Rocket

$t = 0$ $h(t) = -4.9t^2 + 19.6t + 34.3$
$h(0) = -4.9(0)^2 + 19.6(0) + 34.3$
$h(0) = 34.3\text{m}$ at $t = 0$ the rocket is already 34.3 m high

The height of the building is 34.3 m high.

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5 sec
$t = 5$
$h(5) = -4.9(5)^2 + 19.6(5) + 34.3$
$h(5) = -4.9(25) + 98 + 34.3$
$h(5) = -122.5 + 132.3$
$h(5) = 9.8\text{m}$
$h(6) = -4.9(6)^2 + 19.6(6) + 34.3$
$h(6) = -24.5$
Somewhere b/n 5 and 6 sec the rocket hits the ground
by sub the rocket hits the ground after 5.3 s
$h(5.3) = 0$

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I) Substitution of Special Functions p30

$f(x) = 2x^2 + 3x - 1$

i) $f(5) - f(4)$

$f(5) - f(4) = [2(5)^2 + 3(5) - 1] - [2(4)^2 + 3(4) - 1]$
$= [2(25) + 15 - 1] - [2(16) + 12 - 1]$
$= 50 + 15 - 1 - [32 + 12 - 1]$
$= 65 - 1 - (44 - 1)$
$f(5) - f(4) = 64 - 43$
$= 21$

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II) $R(s) = -10s^2 + 800s + 120$ p30 Ex 3

$R(5) = -10(5)^2 + 800(5) + 120$
$R(5) = -250 + 4000 + 120$
$R(5) = 4120 - 250$
$R(5) = 3870$

When the company charges $5 they will generate $3870 in revenue

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ii) $R(20) = 12\,120$

when the company charges $20 per pair of sunglasses they generate $12 120.00 in revenue

iii) $R(s) = 16\,120$

$16120 = -10s^2 + 800s + 120$

$0 = -10s^2 + 800s + 120 - 16120$

$0 = -10s^2 + 800s - 16000$

$0 = -10(s^2 - 80s + 1600)$

off graph $R(40) = 16\,120$

At a selling price of $40 per pair of sunglasses you generate $16 120

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Common Factor

$0 = -10s^2 + 800s - 16000$

$0 = s^2 - 80s + 1600$

$0 = (s-40)(s-40)$

∴ selling price is 40

p32-35

q 3, 4, 5, 10(i)(ii) 12, 16

A	M
-80	1600

1, 2, 4, 8, 10, 20, 25, -40

1600, 800, 400, 200, 160, -40, -40

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$f(x) = -3x^2 + 5$ $f(2x)$

$f(2x) = -3(2x)^2 + 5$

$f(2x) = -3(4x^2) + 5$

$f(2x) = -12x^2 + 5$

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